“Externalities”
The Costs of Natural Resource Degradation

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- SVP Markets, WWF-US

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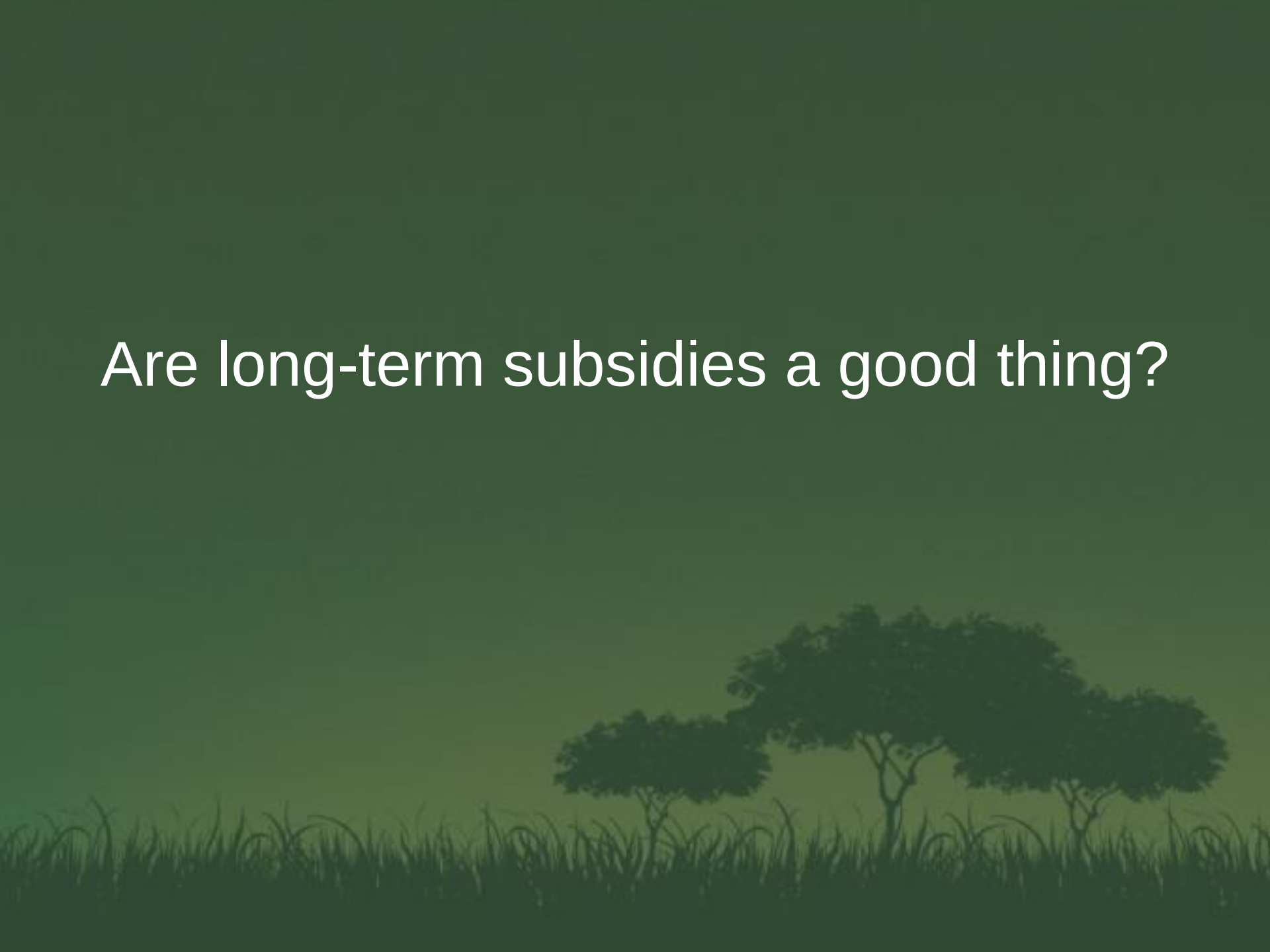
Are long-term subsidies a good thing?



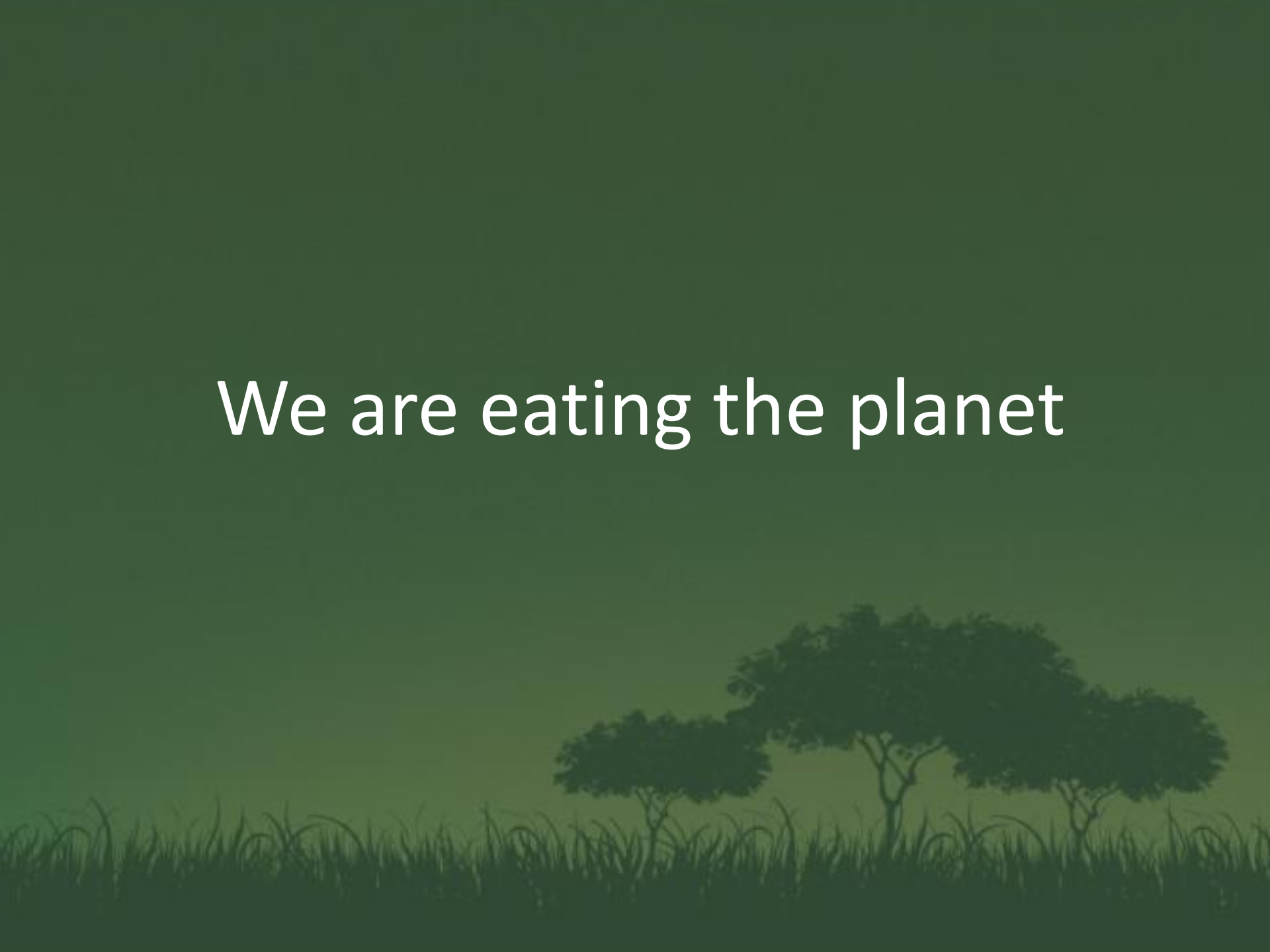
What is the biggest source of subsidies?

Should consumers should pay the true cost of products?

Pacific Ethanol, Inc.

Is Food Too Expensive?

We are eating the planet



Agriculture is the biggest threat


Deforestation
90% Agriculture & Ranching
10% Logging, Pulp & Paper


Water
Twice as much as all other uses combined
1 liter of water = 1 calorie of food

Largest source of pollution


Largest user of chemical


Globally has reduced topsoil by half

Impacts come from large and small-scale producers

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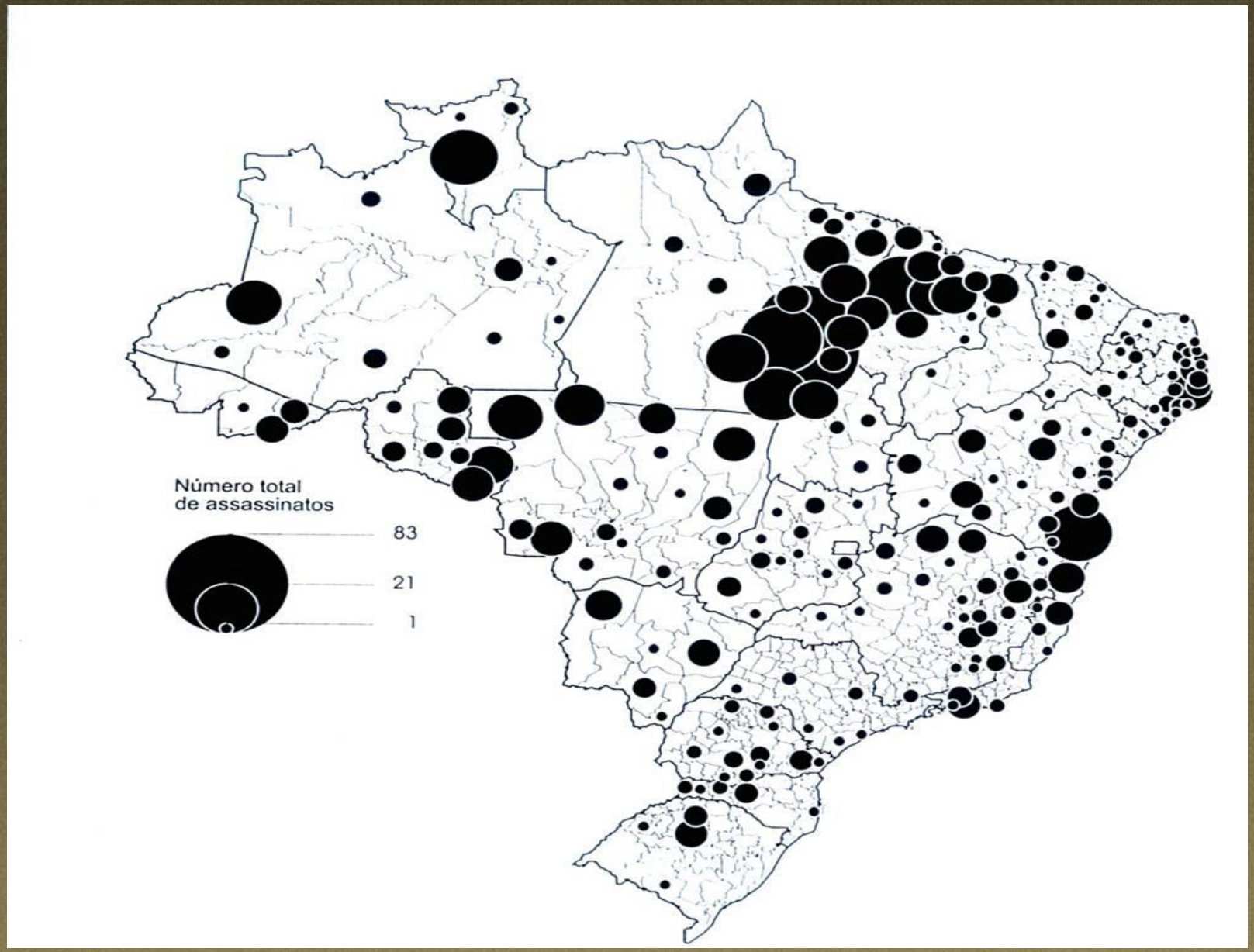
People Killed in Brazilian Land Conflicts



Impacts that are acceptable with 6 billion

will not be acceptable with 9 billion people.

We need to shift our thinking from maximizing any one variable

to optimizing several key ones

You manage what you measure.

But, producing anything has impacts.

So, what should we measure?

Externalities, Products and Prices—Water

	Raw material input	Water to produce input	Farm gate price
1 Cotton T-shirt	4 oz ginned	500 to 2,000 liters of water	US$0.20 (Aust.)
1 liter of soda	6 T sugar	175-250 liters of water	US$0.006 (Brazil)
1 oz. slice of cheese	6 oz milk	40 liters of water	US$0.03 (US)
1 double quarter-pounder	8 oz hamburger	3,000 to 15,000 liters of water	US$0.25 (US)

Those who benefit most from services or need them the most are most likely to pay for them.

Who benefits most from pollination?

Farmers

Who benefits most from reduced soil erosion, increased soil carbon, predator control, etc.?

Reclaiming Degraded Land in Brazil by Increasing Soil Carbon from 0.5 to 3%

Methods

- No-till, crop rotation, pasture grasses

Results after 5-6 years

- Reduced input use (up to 50% less pesticides, water, fertilizer; 70% less fungicides)
- Reduced environmental impacts (up to 90% less effluents)
- Increased production and profits

Lessons

- Farmers make more money growing soil than soy—land values increase
- Brazil can increase land in soy >2% per year for 25 years without cutting a single tree or reducing the number of cows

You Manage What You Measure
Retiring Marginal Land Saves Money

Retiring marginal land increases profits and creates conservation benefits

Carbon markets could encourage this!

Reducing Pesticide Use—Wisconsin Potatoes

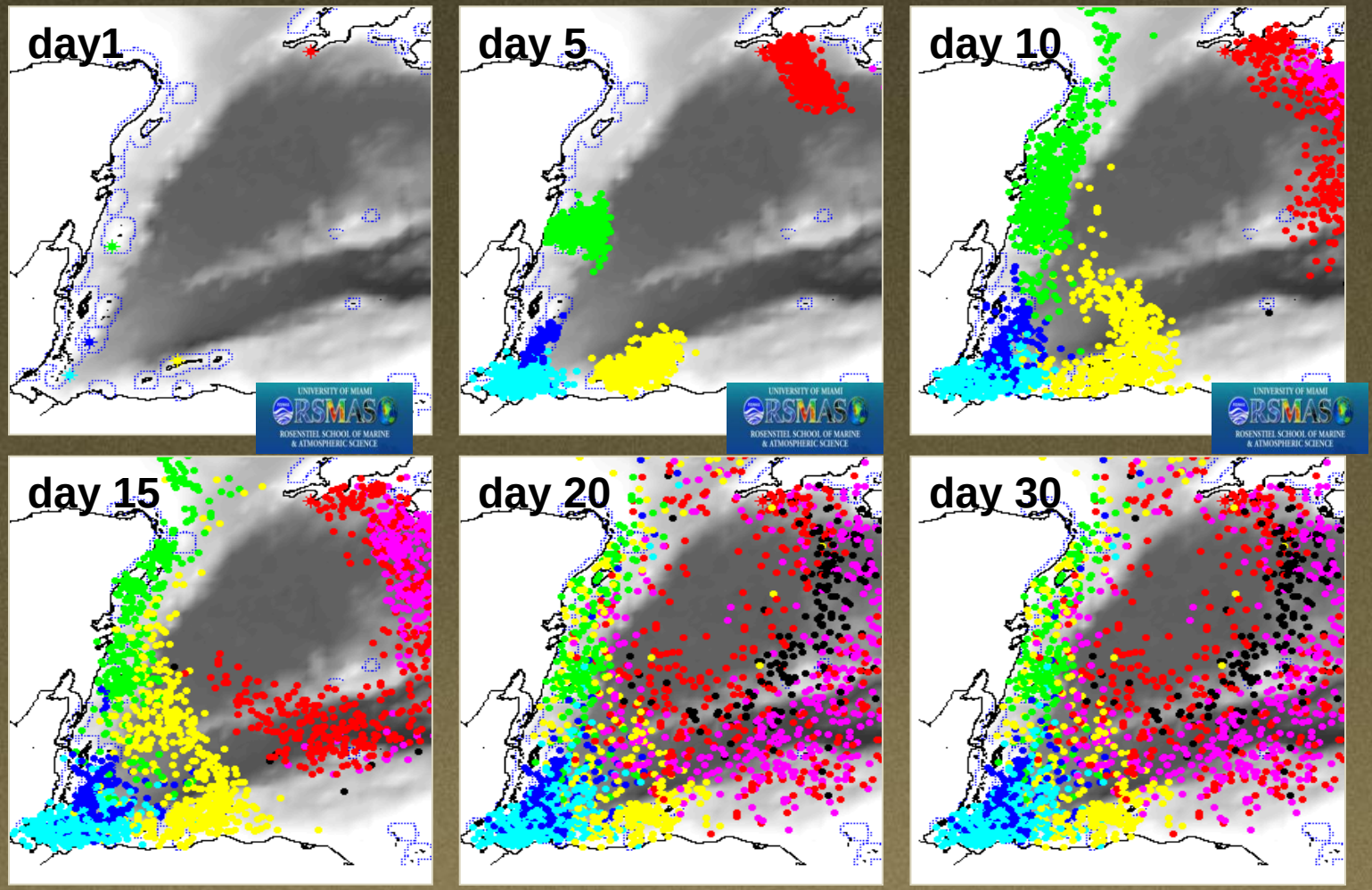
Approach:

- Identify pesticides used
- Develop toxicity rating
- Prepare toxicity budgets
- Reduce overall use

Results after 6 years:

- Certified 5% of growers
- Reduced class I & II users
- Reduced toxicity by 50%
- Organic too toxic to qualify

Protecting Key Processes—Larval Dispersal



The value of forest to farmers

Coffee near forest:

- more diverse bees
- more pollination
- 20% higher yields

Value of forest:

- $60,000/year to 1 farm
- 10x more than current conservation incentive payments

We can’t do everything. We need to focus.

Start with a service that has a market

Governments don’t manage the planet

physical values

weights and measures

quality

color

foreign matter

health and safety

intangible/certified values

organic

non-GMO

carbon

water

poverty alleviation

protected riparian areas

biodiversity

no child labor

Carbon and Commodities

Carbon and Commodities—The Goal

A voluntary carbon program where retailers and brands buy credible carbon through their existing supply chains, e.g. it is a supply chain management tool.

Carbon and Commodities—Phase 1

Assess the potential carbon from 6-8 crops

- Annual crops—Soy, Cotton
- Perennial—Cocoa, Coffee, Cashews, Palm Oil
- Forests—Paper, Timber
- Animal—Beef, Dairy
- Other—Sugarcane

Define the methodological parameters

Develop a business model for Carbon & Commodities

Credible Carbon—Examples

Short-Term Carbon--Immediate

- C credits for tree crops, shade trees, or riparian area protection
- Adoption of BMPs (e.g. cover crops, no-till, improved efficiency, etc.)
- Reduced net carbon-intensive input use (e.g. fertilizer, pesticides, water)

Medium-Term Carbon—3-5 Years

- Generation of energy with residue/waste
- Use of trimmings for fuel
- Avoided degradation by planting on degraded land or improving productivity or both

Long-Term Carbon—10 Years

- Increased soil carbon

Some Issues Identified in the Initial Assessment

Sequestered carbon

Avoided carbon

Avoided deforestation and peat loss is key

Methane is a big issue

Processing residue is large

Processing location is important

Carbon and Commodities Forward—Phase 2

Identify the 6 commodities with most C potential

Recruit partners to explore C and specific supply chains

Identify existing C methodologies

Identify where C methodologies do not yet exist for ag

Identify common issues (risks, opportunities, concerns) for the different commodities

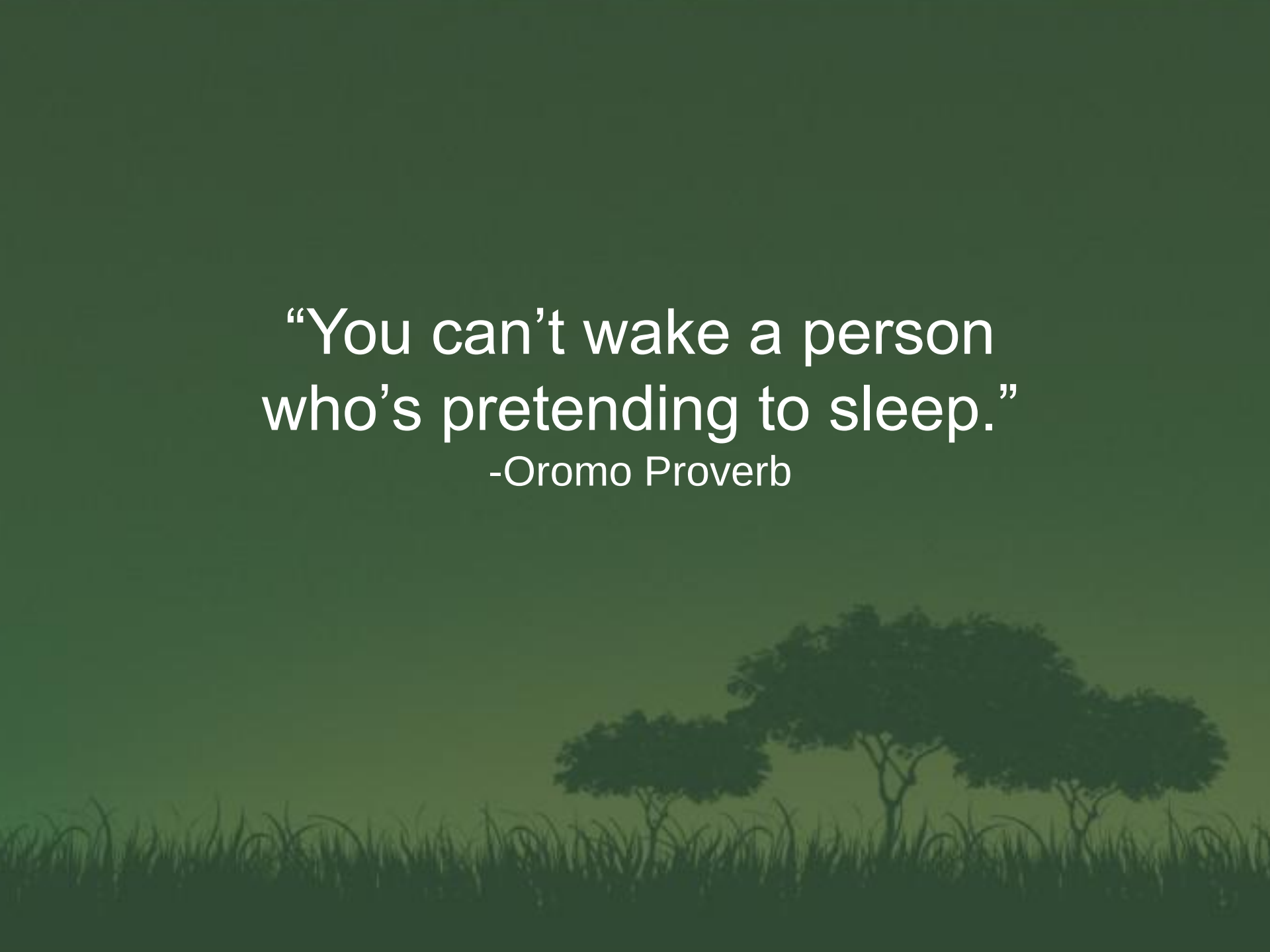
Evaluate impacts on biodiversity & water from GHG reductions

There’s no such thing as a free lunch

Addressing externalities will increase the price of food

“You can’t wake a person who’s pretending to sleep.”

-Oromo Proverb

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